

Wyoming's Smoke Management Program Annual Evaluation 2017

Hosted by: Wyoming Department of Environmental Quality

Air Quality Division

February 21, 2017 from 10:00 a.m.-12:00 p.m.

Conference Room 210

200 West 17th Street

Cheyenne, WY 82002

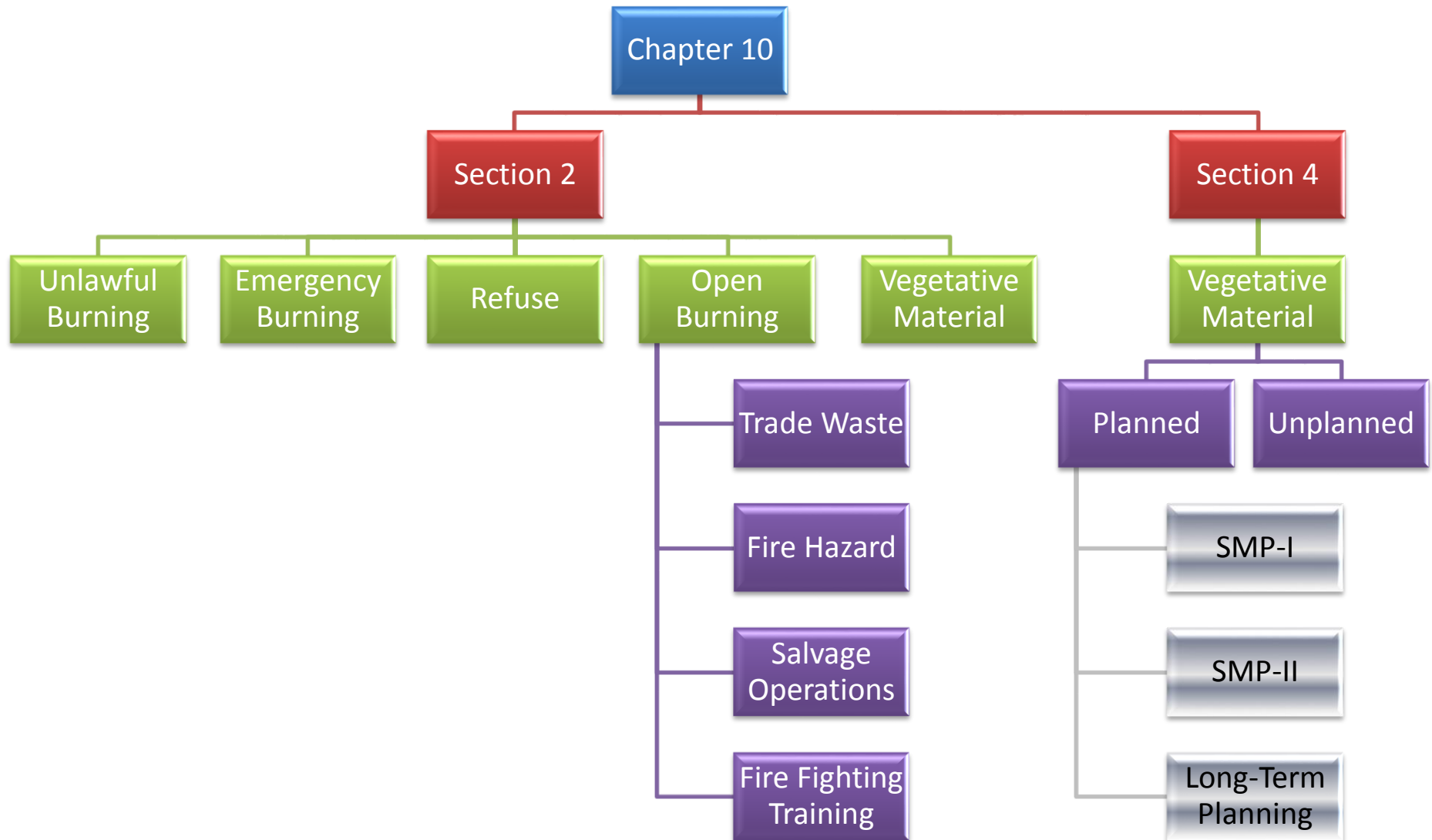
SMP Contact Information

- Please send all smoke management correspondence to:
 - smoke.management@wyo.gov
- Primary Contacts:
 - Ryan Beavers on Monday thru Thursday and Friday Morning
 - (307)777-6126
 - Ryan.beavers@wyo.gov
- Backup Contact:
 - Tyler Ward
 - (307)777-7872
 - tyler.ward@wyo.gov
- EI & RH Supervisor:
 - Ben Way
 - (307)777-7017
 - ben.way@wyo.gov
- Emergency Contact:
 - Darla Potter, AQRM Program Manager
 - (307)777-7380
 - darla.potter@wyo.gov

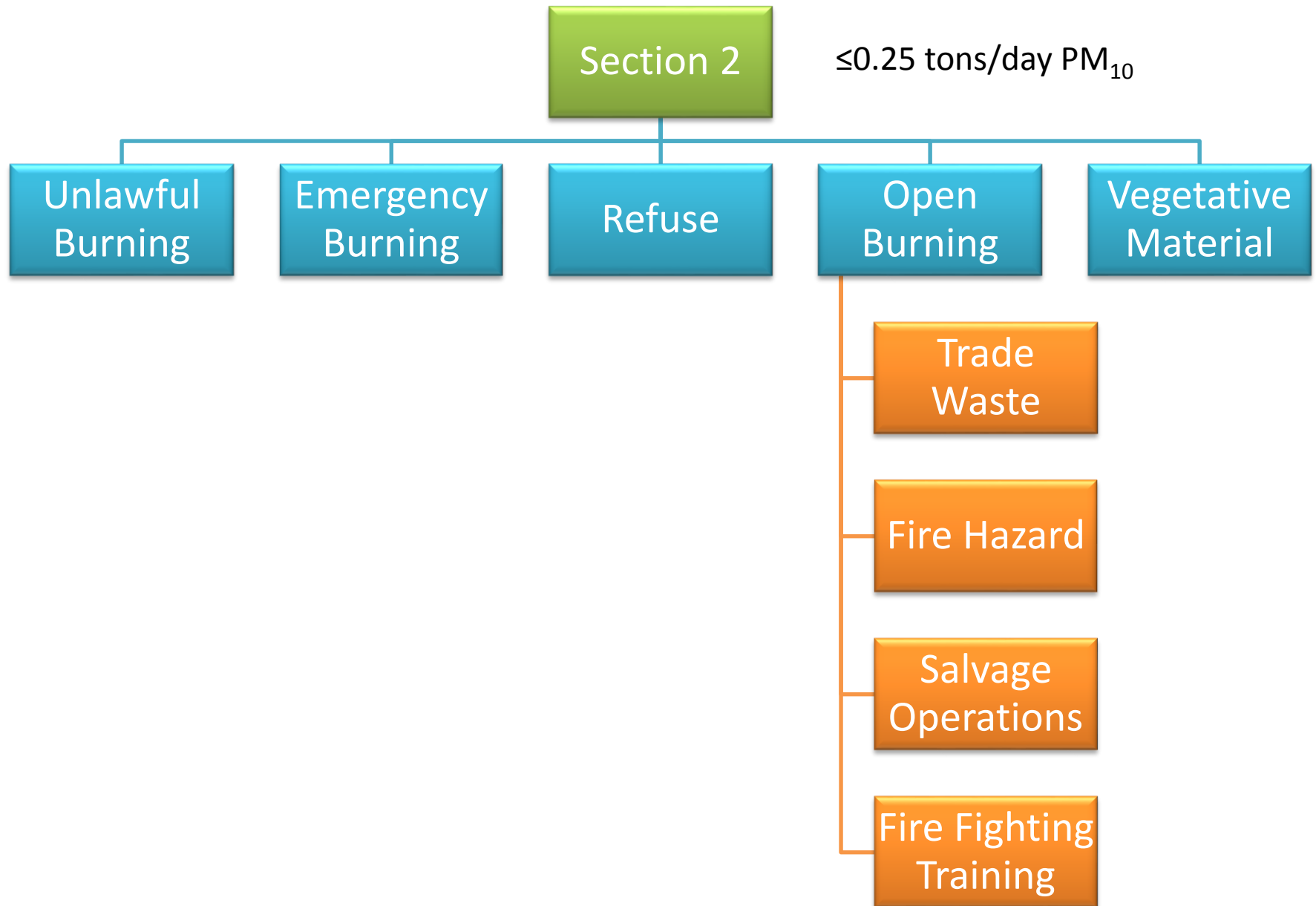
Outline

- WAQSR Ch. 10 Regulations
 - Open Burning under Ch. 10, Section 2
 - Prescribed Burning (SMP-I,II) under Ch. 10, Section 4
 - Unplanned Events under Ch. 10, Section 4
 - Long Term Planning under Ch. 10, Section 4
- Burn statistics from 2014, 2015 and 2016
- Emissions from fires in 2013 and 2014
- UGRB Ozone Non-Attainment Area
- Useful Websites and Links
- Questions and conversation

WAQSR Ch. 10 Structure



WAQSR Ch. 10, Section 2



Vegetative Material

- *“Vegetative material” means untreated or unprocessed wood, including, but not limited to, trees, tree stumps, tree limbs, bark, chips, duff, grass, grass clippings, leaves, conifer needles, bushes, shrubs, weeds, clippings from bushes and shrubs, and agricultural plant residue.*

Trade Wastes

“Trade wastes shall mean solid, liquid, or gaseous material resulting from construction or the prosecution or any business, trade or industry, or any demolition operation including but not limited to wood, plastics, cartons, grease, oil, chemicals and cinders and excluding vegetative material and refuse.”

Prohibited Materials

“Prohibited materials” means substances including, but not limited to; natural or synthetic rubber products, including tires; waste petroleum products, such as oil or used oil filters; insulated wire; plastic products, including polyvinyl chloride (“PVC”) pipe, tubing and connectors; tar, asphalt, asphalt shingles, or tar paper; railroad ties; wood, wood waste, or lumber that is painted or chemically treated; explosives or ammunition; batteries; hazardous waste products; asbestos or asbestos containing materials; or materials which cause dense smoke discharges, excluding refuse and flaring associated with oil and gas well testing, completions and well workovers.”

Unlawful Burning

“No person shall burn prohibited materials using an open burning method, except as may be authorized by permit.”

Ch. 10, Section 2 (c)

Emergency Burning

“For purposes of eliminating a potential or an imminent danger to public health, safety, or the environment, the Administrator of the Division may, on a case-by-case basis, waive any and all requirements of this Section.”

Ch. 10, Section 2 (d)

Refuse Burning

“No person shall dispose of refuse by open burning, or cause, suffer, allow or permit open burning of refuse, except open burning of refuse associated with dwelling units, farmsteads, or ranch headquarters generated on those same premises, when all of the following requirements are met.”

Ch. 10, Section 2 (e)

- Refuse Burning Restrictions

- (i) Nearest population is at least 500 feet away from the refuse burn.
- (ii) The refuse burn is conducted during the daytime hours.
- (iii) The person conducting the open burn shall attend and observe the refuse burn periodically to determine the dispersion, direction, and impacts of the smoke.

Ch. 10, Section 2 (f): Open Burning

“No person or organization shall conduct or cause or permit open burning for the disposal of trade wastes, for a salvage operation, for the destruction of fire hazards if so designated by a jurisdictional fire authority, or for fire fighter training, except when it can be shown by a person or organization that such open burning is absolutely necessary and in the public interest. Any person or organization intending to engage in such open burning shall file a request to do so with the Division, on a form provided by the Division. Upon approval of the request by the Division, the person or organization may proceed with the open burn, when all of the following requirements are met.”

Open Burning Requirements

- (i) Remove all prohibited materials unless the permit allows for it.
- (ii) Notify the Division prior to the ignition of the open burn, in accordance with the notification process approved by the Administrator of the Division.
- (iii) Prior to ignition, notify the jurisdictional fire authority (or authorities) responsible for the geographic area of the open burn.
- (iv) Attend and observe the open burn periodically to determine smoke dispersion and impacts.

Open Burn Form

STATE OF WYOMING
DEPARTMENT OF ENVIRONMENTAL QUALITY – AIR QUALITY DIVISION

Open Burn Request Form
Fire Fighting Training, Fire Hazard, Trade Waste, Salvage Operation

CONTACT INFORMATION

NAME _____ PHONE _____
ADDRESS _____ FAX _____
CITY _____ E-MAIL _____
STATE _____ ZIP _____
AGENCY/COMPANY (IF APPLICABLE) _____

BURN INFORMATION

LOCATION: COUNTY _____
ADDRESS _____
LEGAL: SECTION _____ TOWNSHIP _____ RANGE _____
NEAREST POPULATION _____
BURN SCHEDULE _____
COMPOSITION & QUANTITY OF MATERIAL _____

BURN TYPE: FIRE FIGHTING ☐ FIRE ☐ TRADE ☐ SALVAGE
TRAINING HAZARD* WASTE OPERATION

* SPECIFY DESIGNATING JURISDICTIONAL FIRE AUTHORITY _____
IF PROHIBITED MATERIALS HAVE NOT BEEN REMOVED, STATE THE REASON WHY AS WELL AS WHY
THEY SHOULD BE ALLOWED TO BE BURNED. _____

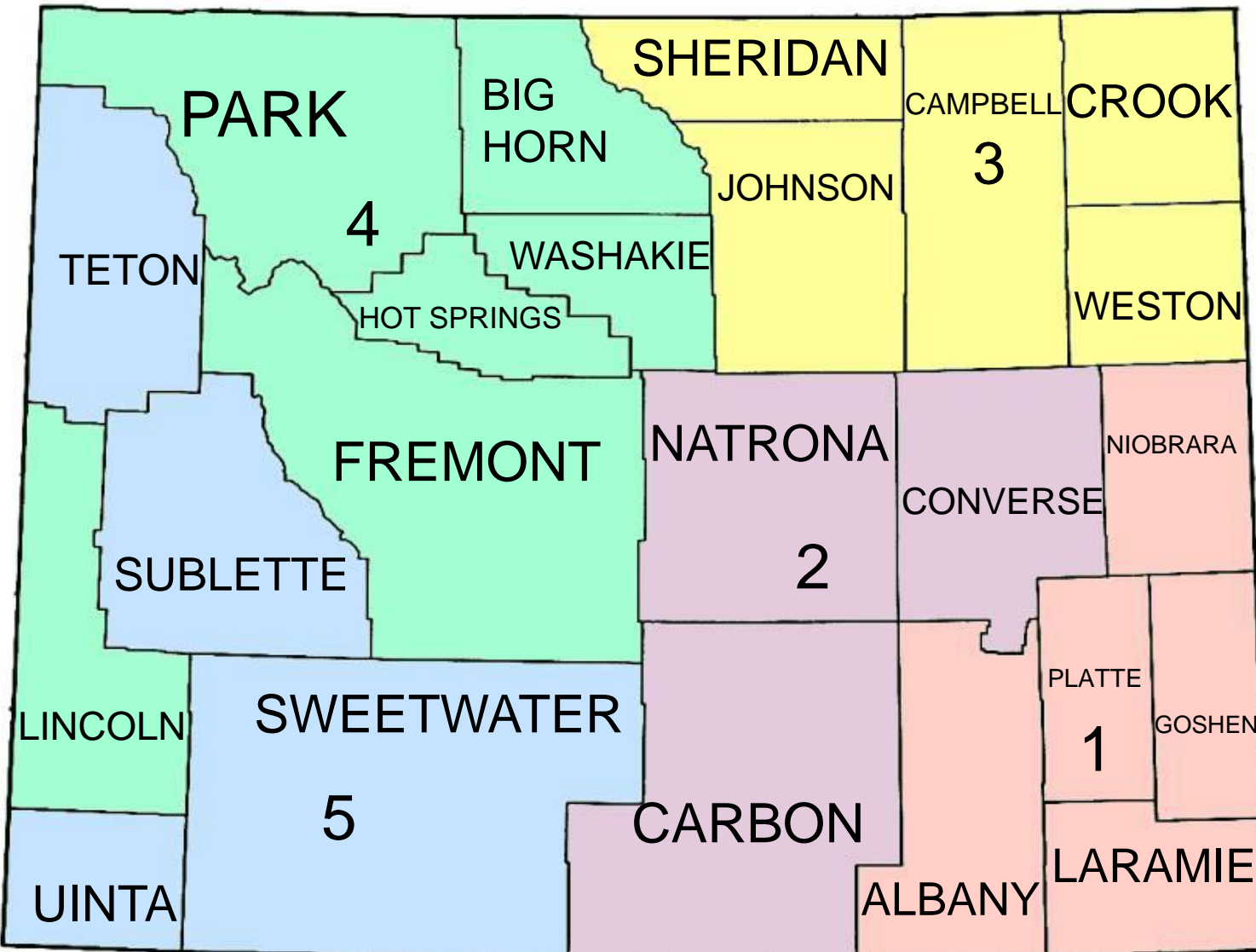
TO SHOW THAT OPEN BURNING IS NECESSARY AND IN THE PUBLIC INTEREST, STATE THE REASON(S)
WHY NO DISPOSAL METHOD OTHER THAN OPEN BURNING CAN BE USED. _____

COMMENTS _____

*Please note that approval of the open burn request must be granted by the Division prior to
conducting the open burn.*

*Prior to igniting the open burn: Notify the Air Quality Division
Notify the Jurisdictional Fire Authority(ies)*
While conducting the open burn: Attend and Observe Periodically

SIGNATURE _____ DATE _____



District One

Brian Bohlmann
200 West 17th Street
Cheyenne, WY 82002
(307) 777-6993

brian.bohlmann@wyo.gov

District Two

Chris Hanify
152 N. Durbin St, Suite 100
Casper, WY 82601
(307) 473-3470

chris.hanify@wyo.gov

District Three

Tanner Shatto
1866 S. Sheridan Avenue
Sheridan, WY 82801
(307) 672-6457 or
(307) 673-9337

tanner.shatto@wyo.gov

District Four

Greg Meeker
510 Meadowview Drive
Lander, WY 82520
(307) 335-6932

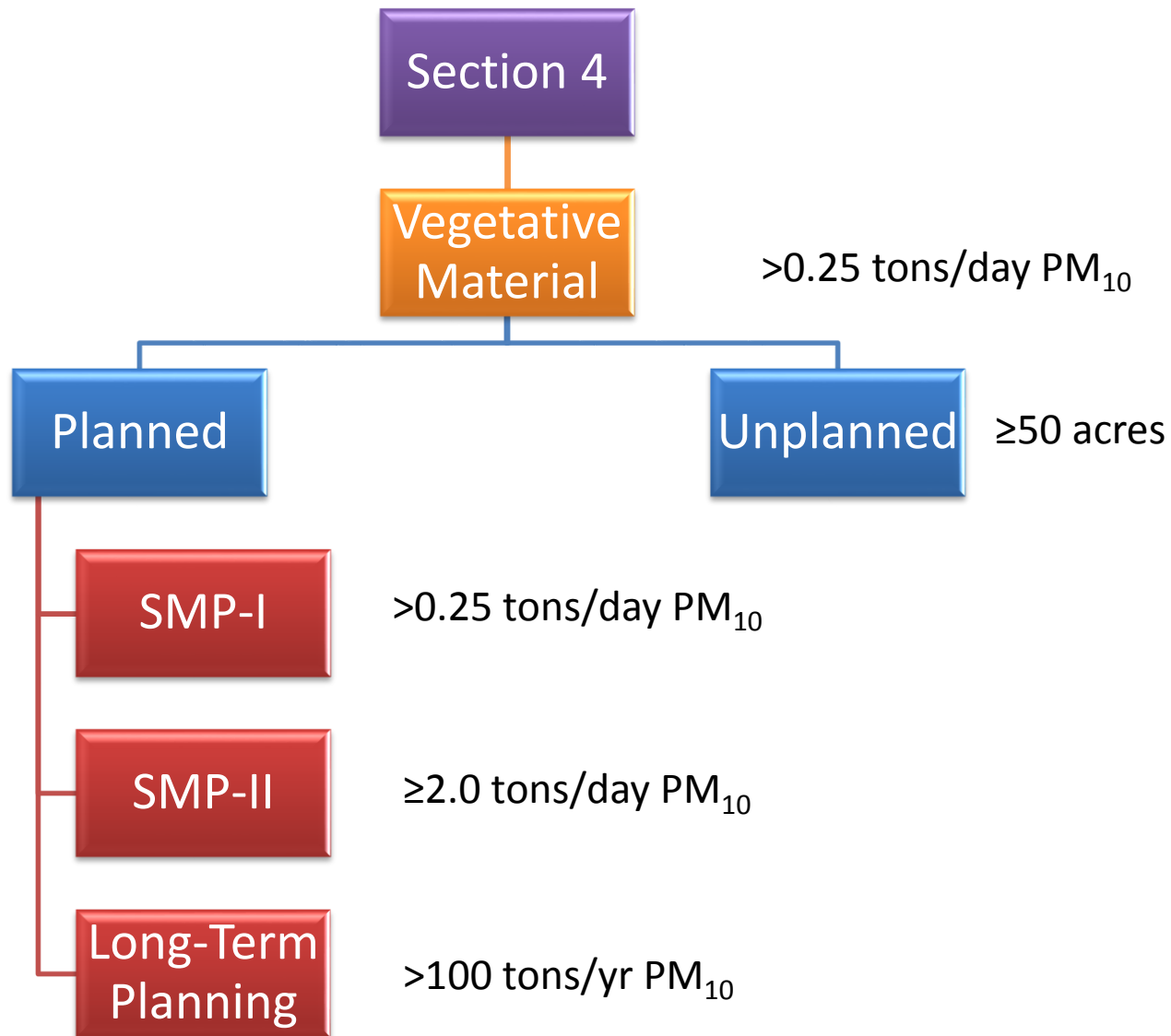
greg.meeker@wyo.gov

District Five

Jeff Wendt
510 Meadowview Drive
Lander, WY 82520
(307) 335-6937

jeff.wendt@wyo.gov

WAQSR Ch. 10, Sec. 4



Type of Regulation

- Permit-By-Rule
 - Reduce administrative burden on burners and WDEQ-AQD
 - Promote equity, clarity and consistency
 - Provide predictability and enforceability
 - Specify circumstances under which a burn is allowed
 - Permit is assumed

Regulatory Status and Applicability

- <http://soswy.state.wy.us/Rules/default.aspx>
 - Search by Agency (Environmental Quality, Dept. of), Program (Air Quality), Rule Type (Current Rules and Regulations) and Chapter # (10)
- Section 4
- (a) Effective Date: For planned burns and unplanned fire events beginning on or after January 1, 2005.
- (b) Definitions
- (c) Applicability:
 - (i) Planned burn with PM_{10} emissions >0.25 tons/day
 - (ii) Unplanned fire events that exceed 50 acres

Regulatory Status and Applicability

- (d) Materials allowed to be burned. **Only vegetative material shall be burned.**
- (e) Compliance with requirements
- (f) SMP-I: Planned burn with PM_{10} emissions between 0.25-2.0 tons/day.
- (g) SMP-II: Planned burn with PM_{10} emissions at or above 2.0 tons/day.

Regulatory Status and Applicability

- (h) Long-term planning:
 - Total planned burn projects are projected to generate PM_{10} emissions greater than 100 tons/yr.
 - Managers must submit a written report to the AQD Administrator by January 31 every third year starting in 2005 (2011, 2014, 2017...).
- (i) Unplanned fire: Unplanned fire event that ≥ 50 acres
- (j) Exclusions

Requirements Summary of Section 4

REQUIREMENT	PLANNED BURN PROJECT		UNPLANNED FIRE
	SMP-I	SMP-II	
Applicability	Burner		Jurisdictional Fire Authority*
	0.25-2.0 tons/day PM ₁₀	≥2.0 tons/day PM ₁₀	≥50 acres
DEQ Registration	Not required	Form by Jan. 31, but at least 2 weeks prior	Info available via alternate source
DEQ Notification	1 hour prior to ignition	By 10:00 a.m. on the business day prior to ignition	Info available via alternate source
DEQ Modification	Not applicable	Required	Required, Managed only
DEQ Reporting	Six (6) weeks after completion		By December 31
Smoke Management Education	Not required	Required	Required, managed only
Alternatives to Burning	Not required	Consider (Provide rationale for NOT using alternatives to burning)	Not Applicable

*Volunteer fire organizations' only requirements in DEQ reporting.

Requirements Summary of Section 4

REQUIREMENT	PLANNED BURN PROJECT		UNPLANNED FIRE
	SMP-I	SMP-II	
Emission Reduction Techniques	Not required	At least one and as many as feasible	Not applicable
Public Information	Notify Jurisdictional fire authorities AND populations within 0.5 mile unless low density area	Notify Jurisdictional fire authorities AND populations within 10 miles	Notify Jurisdictional fire authorities AND populations within 10 miles
Smoke Dispersion	Burn during daytime hours. Slight breeze and wind direction when no population 0.5 mile downwind	Ventilation category: “good” or better OR “fair” and no population within 10 miles downwind OR "poor" with no population within 10 miles	Not applicable
Monitoring	Attend and observe periodically	Visual Monitoring Log or photos required. Case-by-case for populations and nonattainment areas within 10 miles downwind and Class I areas within 30 miles downwind	Visual Monitoring Log or photos required. Case-by-case for populations and nonattainment areas within 10 miles downwind and Class I areas within 30 miles downwind

Requirements Summary of Section 4

REQUIREMENT	PLANNED BURN PROJECT
	LONG-TERM PLANNING
Applicability	Burner and/or Land Manager Total Planned Burn Projects >100 tons/yr PM ₁₀
Long-Term Planning Report	By January 31 every third year starting in 2005 (2005, 2008, 2011, 2014, 2017 , ...)
Long-Term Burn Estimates	Estimates for the next 3 years for each planned burn project: location, burn area or pile volume, vegetation type, type of burn
Alternatives to Burning	Considered and utilized during the previous 3 years AND planned for the next 3 years: location and area of treatment(s), vegetation type(s), specific technique(s)

Open Burn, SMP-I, SMP-II, or Long-Term Planning Equivalencies by Vegetation Type

Vegetation Type	0.25 Ton PM ₁₀ Section 2/Section 4	2 Tons PM ₁₀ SMP-I/SMP-II	100 Tons PM ₁₀ Long Term Planning
Field Crops	16 acres	130 acres	6,500 acres
Shrub Land	8 acres	68 acres	3,400 acres
Forest	6 acres	46 acres	2,300 acres
Grass	25 acres	200 acres	10,000 acres
Weeds (ditches)	12 acres	100 acres	5,000 acres
Shrub / Forest piles	1,250 cubic feet	10,000 cubic feet	500,000 cubic feet

[Determining SMP-I and SMP-II Status](#)

SMP-I Requirement Checklist

Between 0.25-2.0 tons/day PM₁₀

- Prior to igniting:
 - Verify your SMP level.
 - Notify the DEQ-AQD (at least 1 hour prior to ignition).
 - Obtain Smoke Dispersion Waiver (10.4 (f) iii.)
 - Population Within ½ Mile Downwind
 - Burning on a Day Without a Slight Breeze
 - Burning Outside of Daylight Hours
 - Notify the Jurisdictional Fire Authority (or Authorities).
 - Notify population(s) within 0.5 mile of the burn, unless area of low population density (1 dwelling unit per 10 acres).

SMP-I Requirement Checklist

Between 0.25-2.0 tons/day PM₁₀

- While conducting:
 - Attend and observe periodically.
 - Burn during daytime hours when there is a slight breeze and there is no population within 0.5 mile downwind.
- After completion:
 - Within 6 weeks, submit a completed post burn reporting form.

SMP-I Notification Form

STATE OF WYOMING
DEPARTMENT OF ENVIRONMENTAL QUALITY – AIR QUALITY DIVISION

SMP-I Notification Form

*Notification information may be submitted by phone, or fax or email.
Use of this form is optional.*

CONTACT INFORMATION:

NAME _____ PHONE _____
ADDRESS _____ FAX _____
CITY _____ E-MAIL _____
STATE _____ ZIP _____
AGENCY/COMPANY (IF APPLICABLE) _____

LOCATION:

COUNTY _____ ELEVATION (FEET) _____
LEGAL: SECTION _____ TOWNSHIP _____ RANGE _____
LATITUDE _____ LONGITUDE _____ DATUM _____
UTM: ZONE _____ EAST _____ NORTH _____ DATUM _____

NEAREST POPULATION: (VOLUNTARY)

DAILY BURN INFORMATION: (VOLUNTARY)

	DATE(S) (MONTH/DAY/YR)	VEGETATION TYPE(S)	AREA (ACRES) Max. Possible	PILE VOL. (CU-FT) Max. Possible
DAY 1				
DAY 2				
DAY 3				
DAY 4				
DAY 5				
DAY 6				
DAY 7				

COMMENTS _____

This form shall be submitted to the WDEQ-AQD no later than one hour prior to ignition.

SIGNATURE _____ **DATE** _____

If SMP-I Notification Form is submitted electronically, the electronic signature will be attributed to the sender.

SMP-I Smoke Dispersion Waiver Form

STATE OF WYOMING
DEPARTMENT OF ENVIRONMENTAL QUALITY – AIR QUALITY DIVISION

SMP-I Smoke Dispersion Waiver Form

CONTACT INFORMATION

NAME _____ PHONE _____

ADDRESS _____ FAX _____

CITY _____ E-MAIL _____

STATE _____ ZIP _____

AGENCY/COMPANY (IF APPLICABLE) _____

BURN NAME _____ ID # *To Be Assigned by WDEQ*

LOCATION: COUNTY _____ ELEVATION (FEET) _____

LEGAL: SECTION _____ TOWNSHIP _____ RANGE _____

LATITUDE _____ LONGITUDE _____ DATUM _____

UTM: ZONE _____ EAST _____ NORTH _____ DATUM _____

NEAREST POPULATION _____

DAILY BURN INFORMATION:

	DATE(S) (MONTH/DAY/YR)	VEGETATION TYPE(S)	AREA (ACRES) Max. Possible	PILE VOL. (CU-FT) Max. Possible
DAY 1				
DAY 2				
DAY 3				
DAY 4				
DAY 5				
DAY 6				
DAY 7				

WAIVER REQUEST:

TIME OF DAY ☐ STATE THE CIRCUMSTANCES THAT REQUIRE NIGHTTIME BURNING AND INDICATE THE PLANNED TIME OF IGNITION.

WIND SPEED ☐ STATE THE CIRCUMSTANCES THAT REQUIRE BURNING WHEN THERE IS NOT AT LEAST A SLIGHT BREEZE.

WIND DIRECTION AND DISTANCE TO POPULATION ☐ STATE THE CIRCUMSTANCES THAT REQUIRE BURNING WHEN A POPULATION IS WITHIN 0.5 MILE OF THE PLANNED BURN PROJECT IN THE DOWNWIND TRAJECTORY. STATE THE WIND DIRECTION AND DISTANCE TO POPULATION.

DEMONSTRATION THAT A WAIVER SHOULD BE GRANTED FROM WAQSR CH. 10, SEC. 4(f)(iii):

To be Completed by WDEQ Only

SMP-I SD WAIVER ☐ APPROVED ☐ NOT APPROVED

CONDITIONS _____

APPROVED BY _____ DATE _____

To be Completed by WDEQ Only

SMP-I Post-Burn Report Form

STATE OF WYOMING
DEPARTMENT OF ENVIRONMENTAL QUALITY – AIR QUALITY DIVISION

SMP-I Post Burn Reporting Form

CONTACT INFORMATION:

NAME _____ PHONE _____
ADDRESS _____ FAX _____
CITY _____ E-MAIL _____
STATE _____ ZIP _____
AGENCY/COMPANY (IF APPLICABLE) _____

BURN NAME _____ **ID #** *To Be Assigned by WDEQ*
LOCATION: COUNTY _____ ELEVATION (FEET) _____
LEGAL: SECTION _____ TOWNSHIP _____ RANGE _____
LATITUDE _____ LONGITUDE _____ DATUM _____
UTM: ZONE _____ EAST _____ NORTH _____ DATUM _____
LAND OWNERSHIP: FEDERAL ☐ STATE ☐ MUNICIPAL ☐ PRIVATE ☐

NEAREST POPULATION

PUBLIC INFORMATION:

JURISDICTIONAL FIRE NAME _____ DATE/TIME _____
AUTHORITY (IES): NAME _____ DATE/TIME _____
PUBLIC _____ DATE _____
NOTIFICATION: ☐ AREA OF LOW POPULATION DENSITY WITHIN 0.5-MILE RADIUS

FOR FOREST, GRASSLAND, & SHRUB LAND ONLY: RESTORATION ☐ MAINTENANCE ☐

DAILY BURN INFORMATION:

DATE (MONTH/DAY/YR)	VEGETATION TYPE (SEE LIST)	PILE VOL. (CU-FT)	ACRES	LOADING (TONS/ACRE)	PERCENT CONSUMPTION

SMOKE DISPERSION:

WAIVER - DATE APPROVED					
DATE (MONTH/DAY/YR)	TIME OF DAY	WIND SPEED	WIND DIRECTION	DISTANCE TO POPULATION	VENT. CAT. (OPTION)

AIR QUALITY MONITORING:

☐ ATTENDED AND OBSERVED PERIODICALLY, SPECIFY:
NUMBER OF TIMES _____ FREQUENCY _____
☐ ATTENDED AND OBSERVED AT ALL TIMES
OPTION TO ATTEND AND OBSERVE: ☐ CONDUCTED VISUAL MONITORING, IDENTIFY:
DOCUMENTATION ATTACHED _____

SMOKE MANAGEMENT EDUCATION: (VOLUNTARY)

WDEQ-AQD SMOKE MANAGEMENT EDUCATION MATERIAL REVIEWED ON _____
TRAINING PROGRAM COMPLETED ON _____

EMISSION REDUCTION TECHNIQUES: (VOLUNTARY)

VEGETATION TYPE (SEE LIST)	EMISSION REDUCTION TECHNIQUE(S) (SEE LIST)	ACRES

COMMENTS

This form shall be submitted no later than six weeks following planned burn project completion.

SIGNATURE _____ **DATE** _____
If SMP-I Post Burn Reporting Form is submitted electronically, the electronic signature will be attributed to the sender.

VEGETATION TYPE LIST

Lodgepole Pine / Fir: little dead & down Forest: heavy dead & down with brush Thinning Unit: not piled with red needles Logging Slash: mod. accumulations Logging Slash: clearcut Logging Slash Piles: hand Logging Slash Piles: tractor, clean Logging Slash Piles: tractor, dirty Logging Slash Piles: landing	Ponderosa Pine: open canopy Ponderosa Pine: closed canopy Juniper Sagebrush Mountain Brush Short Grasses Tall Grasses Weeds	Barley Corn Hay Oats Seeds: Alfalfa Seeds: Grass Wheat CRP Ditches
--	--	--

EMISSION REDUCTION TECHNIQUE LIST

<u>Reduce Area Burned</u> Burn Concentrations Isolate Fuels Mosaic Burning Alternate Year Burning	<u>Reduce Fuel Load</u> Mechanical Removal Mechanical Processing Firewood Sales Biomass: Electric Generation Biomass Utilization Ungulates Incorporation into Soil	<u>Increase Combustion Efficiency</u> Burn Piles or Windrows Backing Fires Dry Conditions Rapid Mop-Up Residue Moisture Air Curtain Incinerators (WAQSR Ch 6, Sec 2 permit required) Aerial Ignition / Mass Ignition Into-the-Wind Striplighting Mobile Field Sanitizer Maintaining Fire Line Intensity
<u>Reduce Fuel Production</u> Chemical Treatments Site Conversion Land Use Change	<u>Reduce Fuel Consumption</u> High Moisture in Large Woody Fuels Moist Litter and/or Duff Burn before Precipitation Burn before Large Fuel Cures Burn when Green	Other (specify)

SMP-II Requirement Checklist equal or greater than 2.0 tons/day PM₁₀

- Prior to igniting:
 - Verify your SMP level
 - Review Smoke Management Educational Materials
 - Submit SMP-II Registration Form to DEQ-AQD (2 Weeks Prior to Ignition)
 - Notify the DEQ-AQD (By 10:00 am One Business Day Prior to Ignition)
 - Obtain Emission Reduction Technique Waiver (By 10:00 am One Business Day Prior to Ignition if a Waiver is Necessary)
 - Obtain Smoke Dispersion Waiver (By 10:00 am One Business Day Prior to Ignition if a Waiver is Necessary)
 - If Ventilation Category is Fair or Poor.
 - Notify the Jurisdictional Fire Authority (or Authorities)
 - Notify Population(s) within 10 miles of the burn
 - If required by DEQ-AQD, modify the planned burn project

SMP-II Requirement Checklist equal or greater than 2.0 tons/day PM₁₀

- While conducting:
 - Do not exceed the maximum daily burn area or daily pile volume
 - Burn when ventilation category is “Good” or better OR “Fair” with no population within 10 miles downwind, or “Poor” with no population within 10 miles
 - Utilize at least one emission reduction technique
 - Conduct and document visual monitoring
 - If required by DEQ-AQD, conduct and document ambient air quality and/or visibility monitoring
 - If required by DEQ-AQD, modify the planned burn project
- After completion:
 - Within 6 weeks, submit a completed post burn reporting form (with photos or visual monitoring log)
- Other:
 - If the total planned burn projects total exceeds 100 tons/yr PM₁₀, submit a long-term planning form

SMP-II Registration Form

STATE OF WYOMING
DEPARTMENT OF ENVIRONMENTAL QUALITY – AIR QUALITY DIVISION

SMP-II Registration Form

CONTACT INFORMATION:

NAME _____ PHONE _____
ADDRESS _____ FAX _____
CITY _____ E-MAIL _____
STATE _____ ZIP _____
AGENCY/COMPANY (IF APPLICABLE) _____

BURN NAME _____ **ID #** *To Be Assigned by WDEQ*
LOCATION: COUNTY _____ ELEVATION (FEET) _____
LEGAL: SECTION _____ TOWNSHIP _____ RANGE _____
LATITUDE _____ LONGITUDE _____ DATUM _____
UTM: ZONE _____ EAST _____ NORTH _____ DATUM _____

LAND OWNERSHIP: FEDERAL ☐ STATE ☐ MUNICIPAL ☐ PRIVATE ☐

SENSITIVE RECEPTORS: POPULATION(S) _____ NONATTAINMENT _____ CLASS I AREA(S) _____
W/I 10 MI. ☐ AREA(S) W/I 10 MI. ☐ W/I 30 MI. ☐

JURISDICTIONAL FIRE AUTHORITY(IES) _____

FOR FOREST, GRASSLAND, & SHRUB LAND ONLY: RESTORATION ☐ MAINTENANCE ☐

TIME OF YEAR: DEC. – FEB. ☐ MAR. – MAY ☐ JUNE – AUG. ☐ SEPT. – NOV. ☐

TOTALS: ACREAGE _____ PILE VOLUME (CU-FT) _____ DURATION (DAYS) _____

BURN SIZE & FUEL LOADING BY VEGETATION TYPE:

VEGETATION	ACRES	TONS/ACRE OR CU-FT	VEGETATION	ACRES	TONS/ACRE OR CU-FT
Ponderosa Pine: open canopy			Ponderosa Pine: closed canopy		
Lodgepole Pine / Fir: little dead & down			Forest: heavy dead & down with brush		
Thinning Unit: not piled with red needles			Logging Slash: mod. accumulations		
Logging Slash: clearcut			Logging Slash Piles: hand		
Logging Slash Piles: tractor, clean			Logging Slash Piles: tractor, dirty		
Logging Slash Piles: landing			Juniper		
Sagebrush			Mountain Brush		
Short Grasses			Tall Grasses		
Barley			Corn		
Hay			Oats		
Seeds: Alfalfa			Seeds: Grass		
Wheat			CRP		

ALTERNATIVES TO BURNING (SPECIFY REASON(S) FOR NON-USE):

TECHNICAL _____ ECONOMIC _____
ENVIRONMENTAL _____ PUBLIC INTERESTS _____
ADMIN. BARRIER _____ OTHER _____

EMISSION REDUCTION TECHNIQUES:

	TECHNIQUE	ACRES		TECHNIQUE	ACRES
Reduce Area Burned	Burn Concentrations		Reduce Fuel Consumption	High Moisture in Large Woody Fuels	
	Isolate Fuels			Moist Litter and/or Duff	
	Mosaic Burning			Burn before Precipitation	
	Alternate Year Burning			Burn before Large Fuel Cures	
Reduce Fuel Load	Mechanical Removal		Increase Combustion Efficiency	Burn when Green	
	Mechanical Processing			Burn Piles or Windrows	
	Firewood Sales			Backing Fires	
	Biomass: Electric Generation			Dry Conditions	
	Biomass Utilization			Rapid Mop-Up	
	Ungulates			Residue Moisture	
	Incorporation into Soil			Air Curtain Incinerators (WAQSR Ch 6, Sec 2 permit required)	
Reduce Fuel Production	Chemical Treatments			Aerial Ignition / Mass Ignition	
	Site Conversion			Into-the-Wind Striplighting	
	Land Use Change			Mobile Field Sanitizer	
New Fuels	Burn before Litter Fall			Maintaining Fire Line Intensity	
	Burn before Green-Up			Other (specify) _____	

VENTILATION EXCELLENT ☐ VERY GOOD ☐ GOOD ☐ FAIR* ☐ POOR* ☐
CATEGORY: * SPECIFY WIND DIRECTION _____ & DISTANCE TO POPULATION (MI) _____

AIR QUALITY MONITORING:

☐ WILL CONDUCT AND DOCUMENT VISUAL MONITORING (REQUIRED FOR ALL SMP-II PROJECTS).
☐ PLAN TO CONDUCT AMBIENT AIR QUALITY AND/OR VISIBILITY MONITORING, SPECIFY:

TYPE OF INSTRUMENT(S) _____

LOCATION OF INSTRUMENT(S) _____

SMOKE MANAGEMENT EDUCATION:

WDEQ-AQD SMOKE MANAGEMENT EDUCATION MATERIAL REVIEWED ON _____

TRAINING PROGRAM COMPLETED ON _____

COMMENTS _____

This form shall be submitted by January 31 or no later than two weeks prior to ignition.

SIGNATURE _____ **DATE** _____

If SMP-II Registration Form is submitted electronically, the electronic signature will be attributed to the sender.

SMP-II Notification Form

STATE OF WYOMING
DEPARTMENT OF ENVIRONMENTAL QUALITY – AIR QUALITY DIVISION

SMP-II Notification Form

*Notification information may be submitted by phone, or fax or email.
Use of this form is optional.*

BURN NAME _____ **ID #** _____

DAILY BURN INFORMATION:

	DATE(S) (MONTH/DAY/YR)	AREA (ACRES)		PILE VOLUME (CU-FT)	
		Max. Possible	Most Likely	Max. Possible	Most Likely
DAY 1					
DAY 2					
DAY 3					
DAY 4					
DAY 5					
DAY 6					
DAY 7					

VENTILATION EXCELLENT ☐ VERY GOOD ☐ GOOD ☐ FAIR* ☐ POOR* ☐
CATEGORY: * SPECIFY WIND DIRECTION _____ & DISTANCE TO POPULATION (MI) _____

COMMENTS _____

This form shall be submitted to the WDEQ-AQD by 10:00 am one business day prior to ignition.

SIGNATURE _____ **DATE** _____

If SMP-II Notification Form is submitted electronically, the electronic signature will be attributed to the sender.

SMP-II Emission Reduction Techniques Waiver Form

STATE OF WYOMING
DEPARTMENT OF ENVIRONMENTAL QUALITY – AIR QUALITY DIVISION

SMP-II Emission Reduction Technique Waiver Form

BURN NAME _____ **ID #** _____

NEAREST POPULATION

DAILY BURN INFORMATION:

	DATE(S) (MONTH/DAY/YR)	AREA (ACRES)		PILE VOL. (CU-FT)	
		Max. Possible	Most Likely	Max. Possible	Most Likely
DAY 1					
DAY 2					
DAY 3					
DAY 4					
DAY 5					
DAY 6					
DAY 7					

WAIVER REQUEST:

STATE THE CIRCUMSTANCES THAT REQUIRE BURNING WITHOUT IMPLEMENTING A MINIMUM OF ONE EMISSION REDUCTION TECHNIQUE. STATE ALL APPLICABLE FEASIBILITY CONSIDERATIONS.

DEMONSTRATION THAT A WAIVER SHOULD BE GRANTED FROM WAQSR CH. 10, SEC. 4(g)(i)(C):

[illegible]

COMMENTS _____

Please note that approval of the SMP-II Emission Reduction Technique Waiver must be granted by the WDEQ-AQD prior to igniting the planned burn project.

This form shall be submitted by January 31 or no later than two weeks prior to ignition.

SIGNATURE _____ **DATE** _____
If SMP-II Emission Reduction Technique Waiver Form is submitted electronically, the electronic signature will be attributed to the sender.

SMP-II ERT WAIVER CONDITIONS	<i>To be Completed by WDEQ Only</i>	<input type="checkbox"/> APPROVED <input type="checkbox"/> NOT APPROVED
APPROVED BY _____	DATE _____	
<i>To be Completed by WDEQ Only</i>		

Smoke Dispersion Waiver Submittal

- Submit waivers to DEQ-AQD during regular business hours (Monday-Friday, 8:00 a.m. to 5:00 p.m.) unless otherwise indicated.
 - A waiver for burning during the weekend or on Monday would need to be submitted no later than 10:00 a.m. on Friday
- Smoke Ventilation Categories

Ventilation Category	Knot-Feet
Excellent	>150,000
Very Good	100,000-149,999
Good	60,000-99,999
Fair	40,000-59,999
Poor	<40,000

SMP-II Smoke Dispersion Waiver Form

STATE OF WYOMING
DEPARTMENT OF ENVIRONMENTAL QUALITY – AIR QUALITY DIVISION

SMP-II Smoke Dispersion Waiver Form

BURN NAME _____ ID # _____

NEAREST POPULATION _____

DAILY BURN INFORMATION:

	DATE(S) (MONTH/DAY/YR)	AREA (ACRES)		PILE VOL. (CU-FT)	
		Max. Possible	Most Likely	Max. Possible	Most Likely
DAY 1					
DAY 2					
DAY 3					
DAY 4					
DAY 5					
DAY 6					
DAY 7					

WAIVER REQUEST:

VENTILATION CATEGORY
“FAIR” AND DISTANCE TO
POPULATION

STATE THE CIRCUMSTANCES THAT REQUIRE BURNING WHEN THE VENTILATION
CATEGORY IS “FAIR” AND A POPULATION IS WITHIN 10 MILES OF THE PLANNED
BURN PROJECT IN THE DOWNWIND TRAJECTORY. STATE THE WIND DIRECTION
AND DISTANCE TO POPULATION.

VENTILATION CATEGORY
“POOR”

STATE THE CIRCUMSTANCES THAT REQUIRE BURNING WHEN THE VENTILATION
CATEGORY IS “POOR”. STATE THE WIND DIRECTION AND DISTANCE TO
POPULATION.

DEMONSTRATION THAT A WAIVER SHOULD BE GRANTED FROM WAQSR CH. 10, SEC. 4(g)(i)(D)(II):

- ☐ MAP IDENTIFYING DIURNAL DRAINAGES
- ☐ MAP SHOWING THE PLANNED BURN PROJECT AREA AND POPULATION(S) WITH WIND DIRECTION
- ☐ SMOKE MITIGATION PLAN

COMMENTS _____

Please note that approval of the SMP-II Smoke Dispersion Waiver must be granted by the WDEQ-AQD prior to igniting the planned burn project.

This form shall be submitted to the WDEQ-AQD by 10:00 am one business day prior to ignition.

SIGNATURE _____ DATE _____

If SMP-II Smoke Dispersion Waiver Form is submitted electronically, the electronic signature will be attributed to the sender.

SMP-II SD WAIVER
CONDITIONS

To be Completed by WDEQ Only

☐ APPROVED

☐ NOT APPROVED

APPROVED BY _____ DATE _____

To be Completed by WDEQ Only

SMP-II Post-Burn Report Form

STATE OF WYOMING
DEPARTMENT OF ENVIRONMENTAL QUALITY – AIR QUALITY DIVISION

SMP-II Post Burn Reporting Form

BURN NAME _____ **ID #** _____

PUBLIC INFORMATION:

JURISDICTIONAL FIRE NAME _____ DATE/TIME _____

AUTHORITY(IES):		NAME	DATE/TIME
-----------------	--	------	-----------

PUBLIC METHOD _____ **DATE** _____

NOTIFICATION: METHOD _____ DATE _____

DAILY BURN INFORMATION:[illegible]

EMISSION REDUCTION TECHNIQUES:

WAIVER - DATE APPROVED

VEGETATION TYPE (SEE LIST)	EMISSION REDUCTION TECHNIQUE(S) (SEE LIST)	ACRES

SMOKE DISPERSION:

WAIVER - DATE APPROVED

[illegible]

AIR QUALITY MONITORING:

☐ CONDUCTED VISUAL MONITORING, IDENTIFY:

DOCUMENTATION ATTACHED _____

CONDUCTED AMBIENT AIR QUALITY MONITORING, IDENTIFY:

DOCUMENTATION ATTACHED _____

☐ CONDUCTED VISIBILITY MONITORING, IDENTIFY:

DOCUMENTATION ATTACHED _____

COMMENTS

This form shall be submitted no later than six weeks following planned burn project completion.

SIGNATURE _____ **DATE** _____

If SMP-II Post Burn Reporting Form is submitted electronically, the electronic signature will be attributed to the sender.

VEGETATION TYPE LIST

Lodgepole Pine / Fir: little dead & down	Ponderosa Pine: open canopy	Barley
Forest: heavy dead & down with brush	Ponderosa Pine: closed canopy	Corn
Thinning Unit: not piled with red needles	Juniper	Hay
Logging Slash: mod. accumulations	Sagebrush	Oats
Logging Slash: clearcut	Mountain Brush	Seeds: Alfalfa
Logging Slash Piles: hand	Short Grasses	Seeds: Grass
Logging Slash Piles: tractor, clean	Tall Grasses	Wheat
Logging Slash Piles: tractor, dirty	Weeds	CRP
Logging Slash Piles: landing		Ditches

EMISSION REDUCTION TECHNIQUE LIST

<u>Reduce Area Burned</u> Burn Concentrations Isolate Fuels Mosaic Burning Alternate Year Burning	<u>Reduce Fuel Load</u> Mechanical Removal Mechanical Processing Firewood Sales Biomass: Electric Generation Biomass Utilization Ungulates	<u>Increase Combustion Efficiency</u> Burn Piles or Windrows Backing Fires Dry Conditions Rapid Mop-Up Residue Moisture Air Curtain Incinerators (WAQSR Ch 6, Sec 2 permit required) Aerial Ignition / Mass Ignition Into-the-Wind Striplighting Mobile Field Sanitizer Maintaining Fire Line Intensity
<u>Reduce Fuel Production</u> Chemical Treatments Site Conversion Land Use Change	Incorporation into Soil	
	<u>Reduce Fuel Consumption</u> High Moisture in Large Woody Fuels Moist Litter and/or Duff Burn before Precipitation Burn before Large Fuel Cures Burn when Green	Other (specify)
<u>New Fuels</u> Burn before Litter Fall Burn before Green-Up		

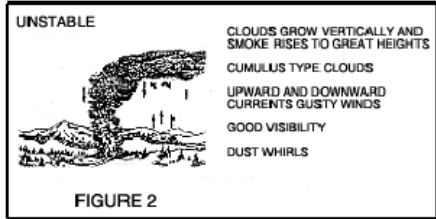
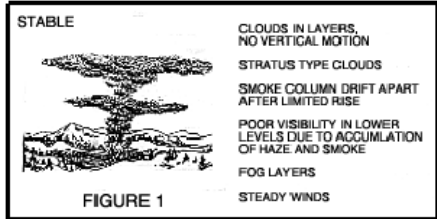
Visual Monitoring Log

STATE OF WYOMING
DEPARTMENT OF ENVIRONMENTAL QUALITY – AIR QUALITY DIVISION

Visual Monitoring Log

BURN NAME _____ ID# _____
OBSERVER _____
NAME(S) _____

SUCCESSIVE OBSERVATIONS:

[illegible]

COMMENTS _____

COMMENTS _____

Unplanned Fire Event Requirement Checklist (greater than 50 acres)

- Prior to managing:
 - Review Smoke Management Educational Materials
- When event (suppressed or managed) exceeds 50 acres:
 - Notify the Jurisdictional Fire Authority(ies)
 - Notify population(s) within 10 miles of the burn
 - Conduct and document visual monitoring
 - If required by DEQ-AQD, conduct ambient air quality and/or visibility monitoring
 - If required by DEQ-AQD, modify the unplanned fire event under management
- After event (suppressed or managed) cessation:
 - By December 31, submit a completed post burn reporting form
- NOTE: Volunteer fire organizations' only requirement is the submittal of the post burn reporting form

Unplanned Fire Post Burn Reporting Form

STATE OF WYOMING
DEPARTMENT OF ENVIRONMENTAL QUALITY – AIR QUALITY DIVISION

Unplanned Fire Post Burn Reporting Form

For events that exceed 50 acres.

CONTACT INFORMATION:

NAME _____ PHONE _____
 ADDRESS _____ FAX _____
 CITY _____ E-MAIL _____
 STATE _____ ZIP _____
 AGENCY/COMPANY (IF APPLICABLE) _____

VOLUNTEER FIRE ORGANIZATION:

7

BURN NAME	ID #	To Be Assigned by WDEQ
-----------	------	------------------------

LOCATION:	COUNTY	ELEVATION (FEET)
-----------	--------	------------------

LEGAL: SECTION TOWNSHIP RANGE

LATITUDE _____ LONGITUDE _____ DATUM _____

UTM:

LAND OWNERSHIP: FEDERAL ☐ STATE ☐ MUNICIPAL ☐ PRIVATE ☐

SENSITIVE RECEPTORS:	POPULATION(S) w/i 10 MI.	NONATTAINMENT AREA(S) w/i 10 MI.	CLASS I AREA(S) w/i 30 MI.

PUBLIC INFORMATION:

JURISDICTIONAL FIRE	NAME	DATE/TIME
---------------------	------	-----------

AUTHORITY(IES): NAME _____ DATE/TIME _____

PUBLIC METHOD _____ **DATE** _____

NOTIFICATION: METHOD _____ DATE _____

MANAGEMENT RESPONSE: SUPPRESSION ☐ MANAGE TO ACHIEVE MGT. OBJECTIVE* ☐

* SPECIFY: RESTORATION ☐ MAINTENANCE ☐

DAILY BURN INFORMATION:[illegible]

AIR QUALITY MONITORING:

☐ CONDUCTED VISUAL MONITORING. IDENTIFY:

DOCUMENTATION ATTACHED

☐ CONDUCTED AMBIENT AIR QUALITY MONITORING. IDENTIFY:

DOCUMENTATION ATTACHED

☐ CONDUCTED VISIBILITY MONITORING. IDENTIFY:

DOCUMENTATION ATTACHED

SMOKE MANAGEMENT EDUCATION: (FOR UNPLANNED FIRE UNDER MANAGEMENT ONLY)

WDEQ-AOD SMOKE MANAGEMENT EDUCATION MATERIAL REVIEWED ON

TRAINING PROGRAM COMPLETED ON _____

COMMENTS

This form shall be submitted to the WDEO-AOD no later than December 31.

SIGNATURE _____ **DATE** _____

If Unplanned Fire Post Burn Reporting Form is submitted electronically, the electronic signature will be attributed to the sender.

VEGETATION TYPE LIST

Lodgepole Pine / Fir: little dead & down	Ponderosa Pine: open canopy	Barley
Forest: heavy dead & down with brush	Ponderosa Pine: closed canopy	Corn
Thinning Unit: not piled with red needles	Juniper	Hay
Logging Slash: mod. accumulations	Sagebrush	Oats
Logging Slash: clearcut	Mountain Brush	Seeds: Alfalfa
Logging Slash Piles: hand	Short Grasses	Seeds: Grass
Logging Slash Piles: tractor, clean	Tall Grasses	Wheat
Logging Slash Piles: tractor, dirty	Weeds	CRP
Logging Slash Piles: landing		Ditches

SMP Implementation for Calendar Year 2016

SMP Registrations

	2016		2015		2014	
Registrations	209		183		203	
	SMP I	SMP II	SMP I	SMP II	SMP I	SMP II
	84	125	58	125	60	143
	40.2%	59.8%	31.7%	68.3%	29.5%	70.5%
Total Proposed Area	43,947 Acres		49,859 Acres		178.052 Acres	
Proposed Pile Volume	17,326,931 ft. ³		12,184,710 ft. ³		14,909,775 ft. ³	
# of Unplanned Events	40		12		7	
Area of Unplanned Events	168,582 Acres		3,731 Acres		3,861 Acres	

Notifications

	2016		2015		2014	
Notifications	110		114		135	
Area	16,945 Acres		17,194 Acres		17,243 Acres	
Pile Volume	17,678,356 ft. ³		6,781,151 ft. ³		10,284,824 ft. ³	
	SMP I	SMP II	SMP I	SMP II	SMP I	SMP II
	84	65	58	56	60	75
	76.36%	23.63%	50.9%	49.1%	44.5%	55.5%
Area (acres)	2,340	14,605	1,928	15,266	1,191	16,052
Pile Volume (ft. ³)	483,183	17,195,173	295,742	6,485,409	1,443,604	8,841,220

Acres and Pile Volume based
of most likely burned

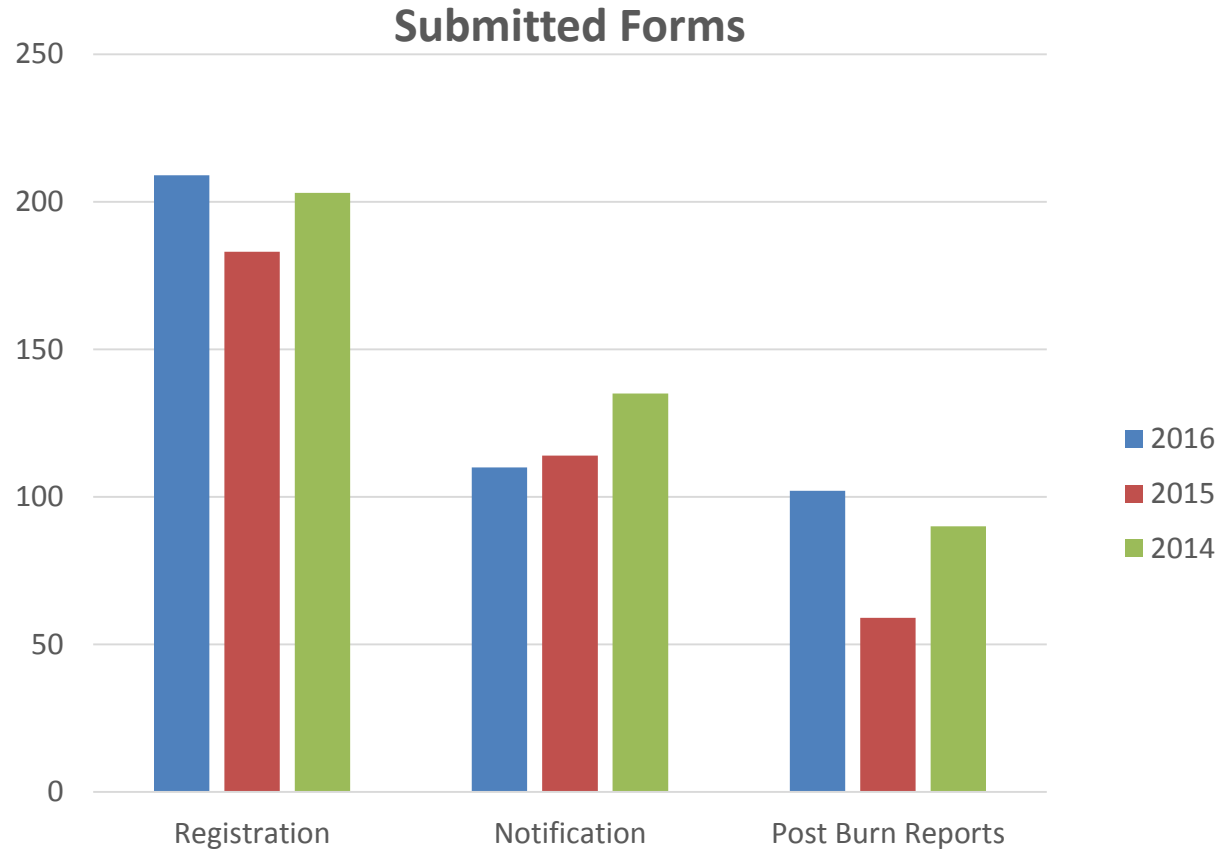
Post Burn Reports

as of 2/21/2017

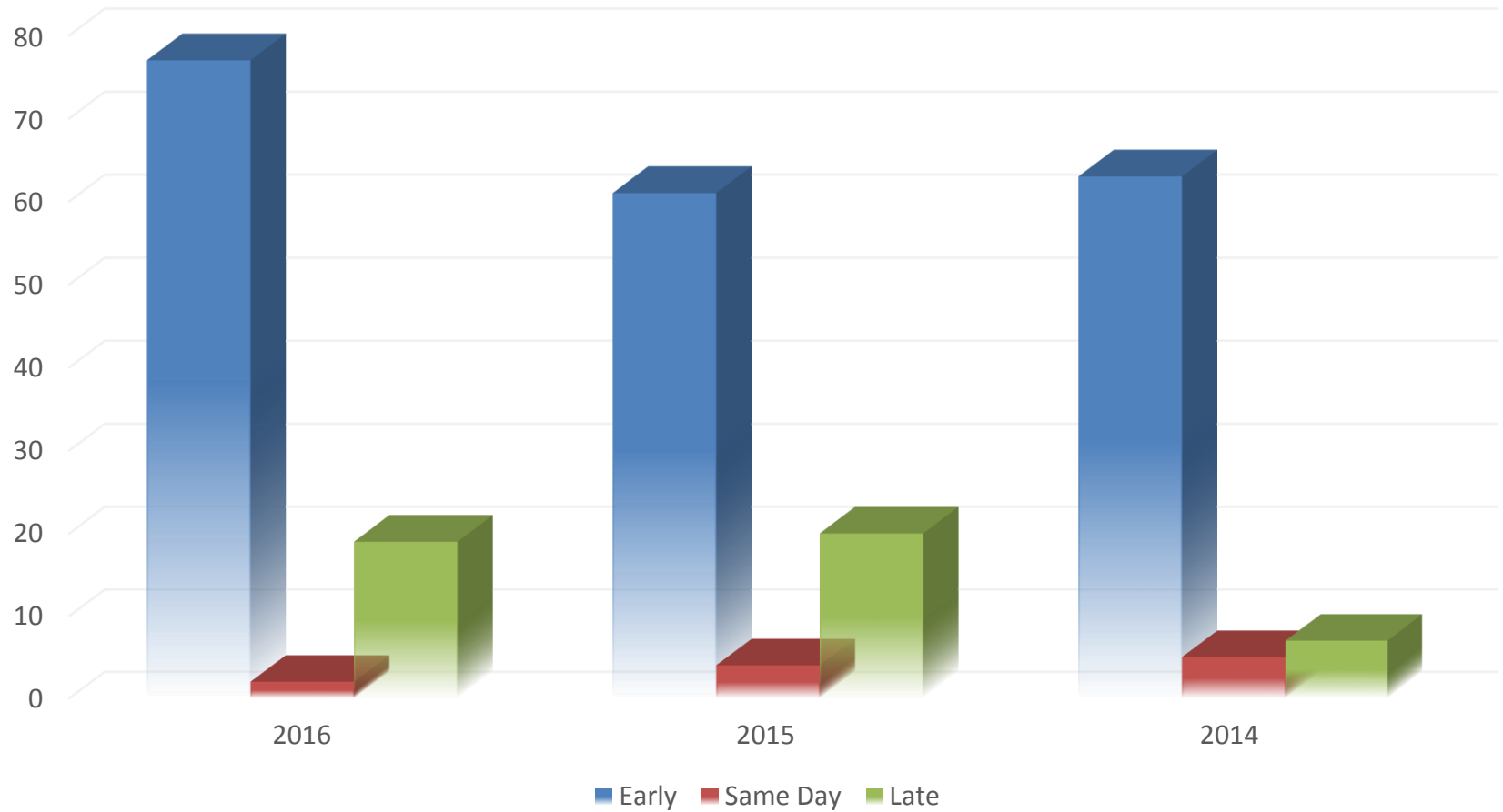
	2016		2015		2014	
Post Burn Reports	102		59		90	
Area	5005.4 Acres		4,736 Acres		5,841 Acres	
Pile Volume	9,170,410 ft. ³		3,948,181 ft. ³		9,450,159 ft. ³	
	SMP I	SMP II	SMP I	SMP II	SMP I	SMP II
	47	55	26	33	34	56
	46.1%	53.9%	44.1%	55.9%	37.8%	62.2%
On-Time Reports	79(77.45%)		48 (81.4%)		64 (75.3%)	
Late Reports	19(22.55%)		11 (18.6%)		26 (24.7%)	

Registrations, Notifications and Post Burn Reports

(as of 2/4/16)



Burn Notification Submittal Time



Comments

- SMP-II Notifications should be received by DEQ by 10:00 am the business day prior to ignition.
- You Have Turned More Reports in On Time.
- Some Post Burn reports and unplanned event reports still needed.
- For SMP-II Registrations, please include: fuel loading and smoke management education. For pile burns, please include the estimated pile size, the estimated number of piles and pile locations.
- If Using a Dispatcher, Make Sure They Know the Burn ID.
- We Report the Data you Send Us, Ensure Your Data is Accurate.

How We Use the Data

- Data from Post-Burn Reports are compiled and then analyzed by the **Western Regional Air Partnership-Fire Emissions Tracking System**
- **WRAP-FETS** calculates emissions from the fire data for us.

2015 Total Fire Emissions

Total Emissions (Tons)	
CH ₄ (Methane)	1,175
OC (Organic Carbon)	1,000
EC (Elemental Carbon)	119
PM _{2.5} (Particulate Matter less than 2.5 µm in diameter)	3,113
PM ₁₀ (Particulate Matter less than 10 µm in diameter)	5,097
NMHC (Non-Methane Hydrocarbons)	5,559
NO _x (Nitrogen Oxides)	260
SO ₂ (Sulfur Dioxide)	95
CO ₂ (Carbon Dioxide)	321,693
NH ₃ (Ammonia)	502
CO (Carbon Monoxide)	25,339

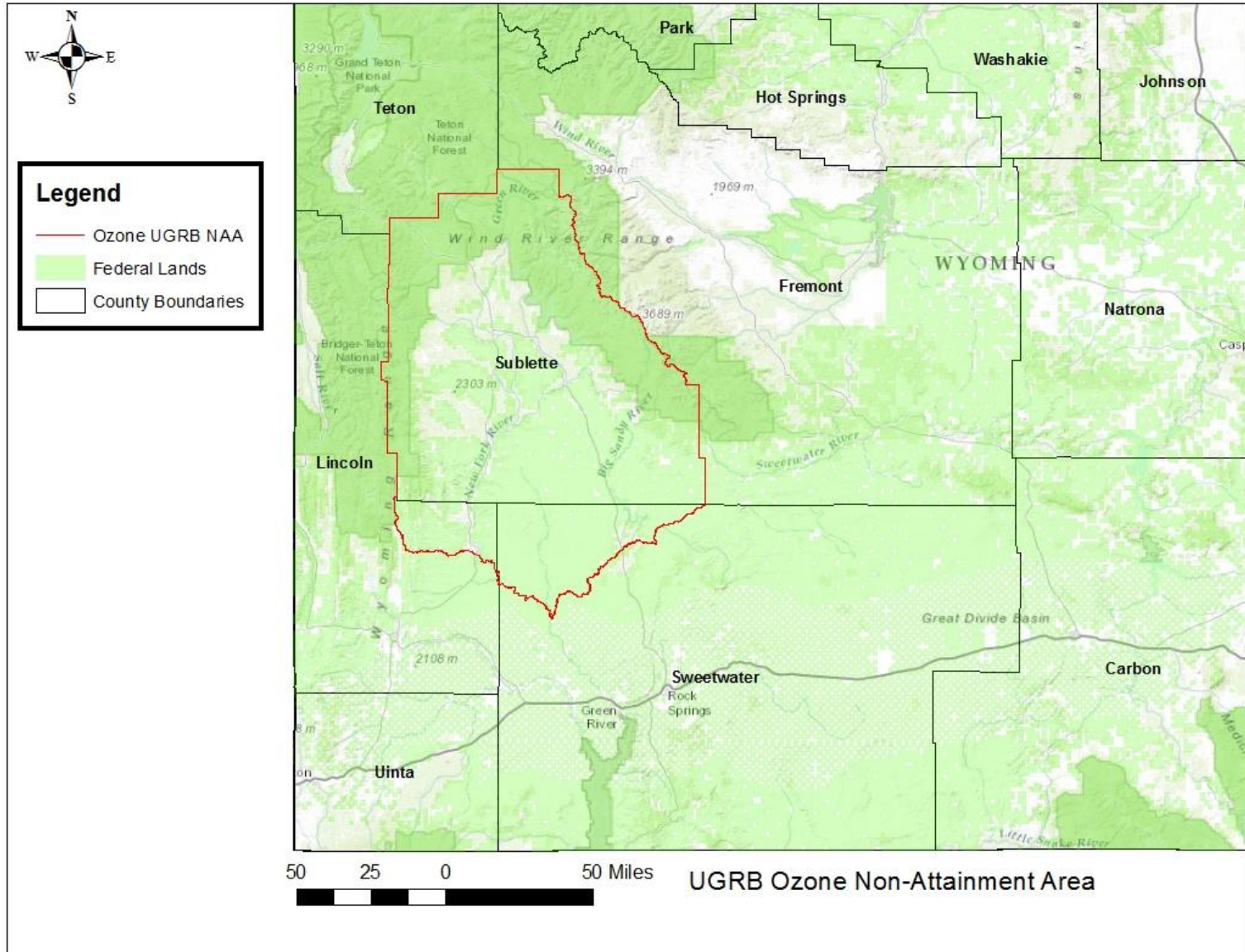
2014 Total Fire Emissions

Total Emissions (Tons)	
CH ₄ (Methane)	106,686
OC (Organic Carbon)	135,276
EC (Elemental Carbon)	12,410
PM _{2.5} (Particulate Matter less than 2.5 µm in diameter)	307,007
PM ₁₀ (Particulate Matter less than 10 µm in diameter)	525,013
NMHC (Non-Methane Hydrocarbons)	866,692
NO _x (Nitrogen Oxides)	39,915
SO ₂ (Sulfur Dioxide)	9,749
CO ₂ (Carbon Dioxide)	34,816,401
NH ₃ (Ammonia)	36,227
CO (Carbon Monoxide)	2,342,886

2013 Total Fire Emissions

Total Emissions (Tons)	
CH ₄ (Methane)	30,617
OC (Organic Carbon)	34,715
EC (Elemental Carbon)	4,128
PM _{2.5} (Particulate Matter less than 2.5 µm in diameter)	95,703
PM ₁₀ (Particulate Matter less than 10 µm in diameter)	174,340
NMHC (Non-Methane Hydrocarbons)	205,079
NO _x (Nitrogen Oxides)	17,054
SO ₂ (Sulfur Dioxide)	3,240
CO ₂ (Carbon Dioxide)	687,930
NH ₃ (Ammonia)	7,452
CO (Carbon Monoxide)	11,912,360

UGRB Ozone Information



Ozone Non-Attainment Area & SMP

- Upper Green River Basin (UGRB) Ozone
 - Winter Ozone Season is from January 1-March 31 every year.
 - Oil and gas operators implement contingency plans when elevated ozone may occur.
 - On days of elevated Ozone, the AQD may not allow burns.
 - All SMP-II burn registrations with locations within 10 miles of the Non-Attainment Area need to mark the checkbox on the form.
 - Ozone NAAQS Can be found at:
(<http://wyvisnet.com/AmbientStandards/Default.aspx>)

Useful Websites and Links

- [Open Burn and Smoke Management Program](#)
- [Wyoming State Forestry Division Fire Information](#)
- [USFS Active Fire Mapping Program](#)
- [WRAP-FETS](#)
- [NIFC Incident Management Report](#)
- [NASA Worldview](#)
- [Fire Weather](#)
- [Smoke Dispersion Forecast](#)
- [BlueSky Playground](#)
- [InciWeb](#)
- [Wyoming SMP Guidance Document](#)
- [SMP Forms](#)
- [Wyoming AQD Ambient Monitors](#)
- [Pile Volume Calculator](#)

Future Goals

- Improve how DEQ-AQD obtains fire emissions via models
- The Air Quality Division has an enterprise system for facility Inventory, Monitoring, Permitting, And Compliance Tracking (IMPACT). Combining the Smoke Management Program into IMPACT is slated for development within the next biennium. This would allow you to submit data directly to the Division electronically rather than by email or fax.

Annual 2018 Meeting

- When: Tuesday, February 20, 2018
- Time: 10:00 a.m. to 12:00 p.m.
- Where: 200 West 17th Street Cheyenne, WY
- Method: To be determined

Contact Information

Name	E-mail	Phone Number	Position	Comment
	smoke.management@wyo.gov	N/A	N/A	Submit all requests/forms to this e-mail address
Ryan Beavers	ryan.beavers@wyo.gov	(307)777-6126	Air Quality Planning Engineer	Monday through Thursday, Friday Mornings
Tyler Ward	tyler.ward@wyo.gov	(307)777-7872	Air Quality Planning Engineer	Monday, Tuesday, every other Friday
Ben Way	ben.way@wyo.gov	(307)777-7017	EI & RH Supervisor	
Darla Potter	darla.potter@wyo.gov	(307)777-7380	AQRM Program Manager	Emergency Contact

Questions or Comments

<http://deq.wyoming.gov/aqd/smoke-management/>

